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Impacting student anxiety for the USMLE Step 1 through process-oriented preparation

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Background: Standardized examinations are the key components of medical education. The USMLE Step 1 is the first of these important milestones. Success on this examination requires both content competency and efficient strategies for study and review. Students employ a wide variety of techniques in studying for this examination, with heavy reliance on personal study habits and advice from other students. Nevertheless, few medical curricula formally address these strategies.

Methods: In response to student-generated critique at our institution, a five-part seminar series on process-oriented preparation was developed and implemented to address such concerns. The series focused on early guidance and preparation strategies for Step 1 and the many other important challenges in medical school. Emphasis was placed on facilitating conversation and mentorship opportunities between students.

Results & Conclusions: A profoundly positive experience was reported by our medical students that included a decreased anxiety level for the Step 1 examination.

Keywords: *medical education*; *USMLE Step 1*; *medical examination*; *student preparation*

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Medical education is monitored at every level by standardized examinations, each requiring intense preparation for successful completion. The United States Medical Licensing Examination (USMLE) Step 1 is one of these major examinations. It is not only necessary for graduation from medical school (1), but it is heavily used by residency program directors as an important objective report on student performance (2, 3). Student preparation for standardized examinations has been shown to vary tremendously with students employing a wide variety of strategies. These strategies include commercial, school-sponsored, and self-generated preparation materials (4). Many reports have documented little or no impact on Step 1 performance by commercially available preparation courses (5–8). Nevertheless, the anxiety associated with this examination convinced 33% of students in one report to invest substantial time and money in such courses (5). While 'personal learning habits' and 'advice from other students' have been shown to be the most important factors that affect overall Step 1 preparation, Zhang et al. (8) reported that the most important factor affecting the decision to participate in a commercial review course was the 'need for an organized schedule'.

To our knowledge, few medical curricula formally address the anxiety associated with preparing for the Step 1 examination. The literature provides few examples of medical school courses that facilitate the development of 'personal learning habits' or provide a means for translating 'advice from other students' into sound educational approaches to study and preparation. In the following, we describe a means through which student-generated critique led to the development of a five-part seminar series designed to address these important issues in medical education. Following the first two years of having implemented this course, a review survey was distributed to assess its impact on student anxiety, and a profound reduction was demonstrated.

Background

Identification of an apparent deficiency

In 2007, our institution administered a comprehensive self-review study in preparation for the Liaison Committee on Medical Education (LCME) site visit and review process. As part of this institutional self-study, a school-wide survey was distributed to all medical students

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that provided students with a means to voice positive and negative opinions about all aspects of the curriculum. With 86.7% of students responding, several clear strengths and areas of opportunity were identified within the medical student experience.

Overall, students were overwhelmingly satisfied with their experience, with over 94% of responders indicating that they were satisfied or very satisfied with their overall experience at our institution (Fig. 1A). Only 4% commented negatively about their overall experience. When asked about the educational program, 80% of students were satisfied or very satisfied, with only 10% commenting negatively (Fig. 1B). This slight decline in student satisfaction was driven by student opinions about academic guidance at our institution. In fact, 74% of students indicated that they were satisfied or very satisfied with the general academic guidance and educational support sponsored by the institution (Fig. 1C). Significantly fewer students from the Class of 2008, the group that had most recently completed the Step 1 examination, were satisfied with their academic guidance, and significantly more of these students were dissatisfied or very dissatisfied as compared to other students (Fig. 2). This sentiment was further outlined in the survey's comments section, in which these students indicated specific concerns about adequate guidance on early preparatory steps for managing Step 1 studying and test-taking. While members of other classes expressed these concerns, a less robust group response likely resulted from recall bias in the Class of 2007, as well as the Classes of 2009 and 2010s not having taken the Step 1 exam yet.

Development of a seminar series

In response to these critiques, the institutional LCME preparatory committee recommended formally enhancing educational guidance within the medical school curriculum, specifically for Step 1 preparation. This committee highlighted the difference between content competency and process-oriented guidance. They confirmed that students were satisfied with the current curriculum and the knowledge-based preparation for Step 1; however, they emphasized that students indicated a desire for earlier awareness of and guidance on potential strategies for planning and preparing (i.e., process strategies). As a result, the LCME recommended that action be taken to incorporate process-oriented preparation for the USMLE Step 1 examination. A committee of select medical students and the Associate and Assistant Deans of Medical Education convened to design and implement such a course. Through student leadership, this group identified many challenges and transitions that are encountered in medical school in addition to the Step 1 examination. They highlighted examples such as transition from undergraduate education to medical education, as well as from repetition-based learning such as in microbiology and anatomy to process-based subjects such as cardiovascular and renal physiology. Ultimately, a five-part seminar series entitled 'Planning and Preparing for Success in Medical School' was developed to span the first two years of school and to provide guidance that complemented the pre-existing curriculum.

Description

A seminar series on process planning

The primary objective of the course is to encourage early process-oriented preparation for success in medical education. The concept of process planning is defined as an educational environment with three primary objectives: (1) to develop early awareness of the transitions and challenges that students encounter in medical school; (2) to encourage early planning for these transitions through organization, schedule generation, and upper class mentoring; and (3) to emphasize early preparation for these transitions

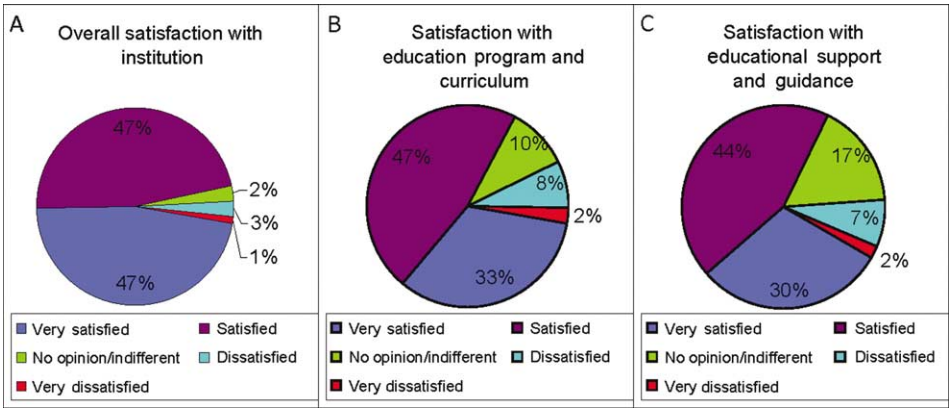

Fig. 1. Student satisfaction as indicated on institutional self-review. Student satisfaction with the overall experiences (A); the educational program (B); and the educational guidance (C) at our institution, as assessed by the five-point Likert scale. Percentages indicate percent of all student responders.

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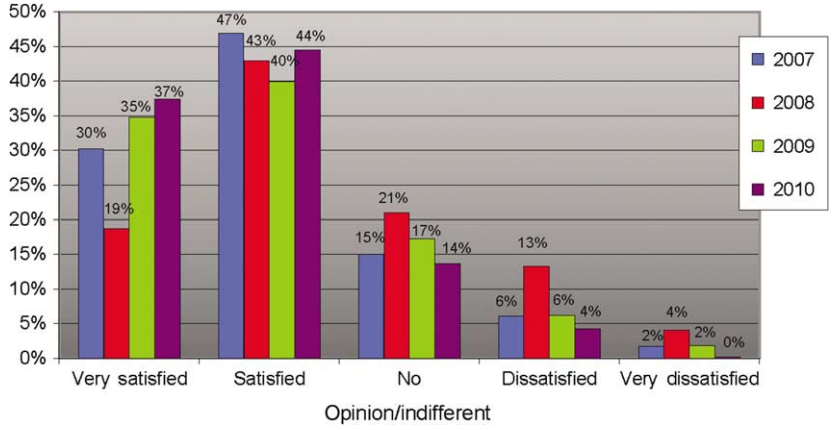

Fig. 2. Satisfaction with student educational support and guidance by class. The breakdown of student satisfaction with the educational guidance and support at our institution by academic year, as assessed by the five-point Likert scale. In the Class of 2008, significantly fewer students were very satisfied and significantly more were dissatisfied.

through resource gathering and comprehensive review throughout school. The five-part series is separated into two divisions, with two sessions occurring during the first year of school that focus on more general concepts and three sessions occurring during the second year that focus more specifically on the USMLE Step 1 examination. Each session consists of a brief didactic presentation provided by one or more selected upper class students, intended to introduce a pre-selected series of salient topics. This is followed by a more extensive interactive forum in which upper class student volunteers offer personal experiences and field specific questions from the first- and second-year students. Prior to each session, self-selected upper class students are briefed on important topics to be covered and are encouraged to reflect on their own past experiences. Open lines of communication are created between students and the opportunity for mentoring becomes inherent within the structure of this interactive series.

The five-part seminar series

The first session is conducted several months into medical school after students have had the opportunity to acclimate themselves to medical education. Students are introduced to the importance of early awareness, planning, and preparation for future transitions. Emphasis is placed on the transition from undergraduate education to medical education, in which students are required to pursue self-directed approaches to learning. Strategies for successful learning in medical school are discussed, with particular emphasis on multi-modality learning, associative learning techniques, adaptive study, and test-taking strategies (9). Most importantly, this session opens the lines of communication between first-year students and their upper class colleagues, providing a formal environment for building educationally focused mentorships between students.

The second session is conducted at the end of the first year prior to summer vacation. At this point, the students have completed their first academic year and are about to depart for several months of protected vacation time. The second session emphasizes the importance of spending this time in career and/or life development as opposed to academic study. Students are formally encouraged to reflect on their educational successes and/or failures during the previous year and adapt their future study strategies accordingly. The two-month summer break is a key time in medical education in which students can actively self-appraise their performance in school and work toward productive changes in their study and test-taking techniques. We have found that students rarely employ self-reflective strategies without formal, structured encouragement, and this session provides an opportunity for early emphasis on self-assessment.

The third session is conducted at the beginning of the second year after students have returned to their didactic activities. This session provides a transition from a general focus on strategies for success in medical school to a specific discussion about techniques that can be employed to focus on future tests and examinations. This session provides strategies that will ultimately prove helpful for planning and preparing for the USMLE Step 1 examination; however, emphasis is placed on the fact that these strategies are applicable to all future tests and examinations. Students are introduced to the concept of the 'iceberg' of medical information (Fig. 3) in which students are inundated with vast amounts of factual information and must identify the point (i.e., water level) that divides higher-yield and potentially testable information from lower-yield and less testable information. The third session emphasizes the use of various resources for managing these difficult waters and determining how to differentiate between higher- and lower-yield information on both institution-based testing and national,

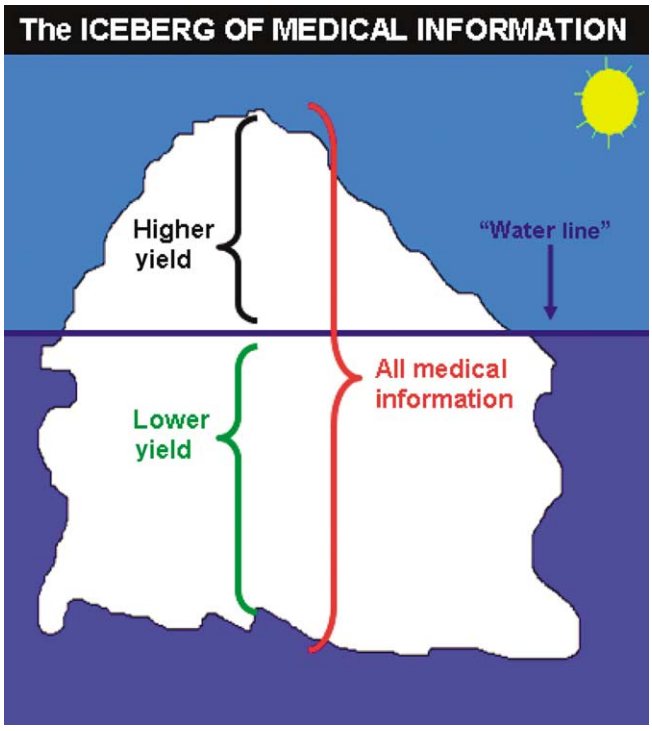

Fig. 3. The 'Iceberg' of medical information. Depiction of the concept of the 'iceberg' of medical information in which students are provided with vast quantities of information and must determine a method for drawing a 'water line.' Developing the ability to draw this line is an important part of medical education, as it helps to differentiate between higher- and lower-yield information.

standardized testing. Upper class volunteers provide first-hand accounts of their experiences, and students are encouraged to actively employ these strategies as they anticipate the future challenge of Step 1.

The fourth and fifth sessions focus exclusively on planning and preparing for the focused study period that is protected from academic responsibility and devoted to Step 1 study. During this study time, students at our institution spend 4–5 weeks in focused, protected review for the Step 1 examination.

The fourth session, conducted prior to the winter vacation, offers the opportunity for students to generate a personalized study strategy and study schedule for their five-week focused review. Examples of different study schedules are provided and their relative advantages and disadvantages are discussed so that students can develop schedules that meet their own personal goals, expectations, and experiences. The fourth session emphasizes the importance of employing techniques for self-assessment during the focused study period, such that students may evaluate their performance throughout their study, prior to test day.

The fifth session is organized somewhat differently from prior sessions. It typically lasts 1.5–2 hours and involves an initial presentation followed by a much longer discussion period in which the second-year students divide into small groups facilitated by upper class students. In these small groups, students bring their schedules and resources for review and have the opportunity to ask specific questions of their upper class colleagues. They receive coaching from the upper class students, both as a group and individually, to achieve a personalized plan for self-preparation. The presentation that precedes this small group time discusses the daily study considerations and addresses the stress and anxiety that will inevitably occur on and after test day. The fifth and final session emphasizes the importance of anticipating post-test anxiety, which we have found to be particularly difficult for students.

Evaluation

Following completion of the second year of this course, a survey was designed to assess the impact of this program on student anxiety. The survey was distributed to all 117 members of the Class of 2011 at the end of the course and prior to the date of Step 1. All students had the opportunity to attend each session of this non-compulsory course. The survey consisted of three questions asking students: (1) to report the number of sessions they attended; (2) whether the course provided helpful guidance on early planning and preparation for the focused Step 1 study period; and (3) to indicate whether they would have felt more, less, or the same anxiety if they had not attended the course. Using a five-point Likert scale,

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students were asked to indicate whether they 'strongly agreed,' 'agreed,' 'neither agreed nor disagreed,' 'disagreed,' or 'strongly disagreed' with these statements. The data was aggregated to tabulate an average response from this class. The results of this review analysis are provided in Fig. 4.

Overall, 74% of all students responded to the survey. This rate may represent nearly all of the student attendees, as attendance of these sessions was not compulsory. Of the responders, 86% of students attended three or more of the sessions. Using the five-point Likert scale, 84% of responders agreed or strongly agreed that the course was helpful in providing guidance for early preparation and planning for the focused Step 1 study time. Only 4.7% of responders disagreed or strongly disagreed with this statement. When asked about anxiety, 49% of students indicated that they would have been more anxious about Step 1 and the focused study time if they had not attended the course. One student commented that the course provided 'a great way to ease the potential stress of Step 1, [and he/she felt] much more confident than before.' While 33% of responders indicated that they would have been equally anxious if they had not attended, these students frequently commented that they would 'still be anxious because ... in general the exam is kind of a big leap.' One of these students commented that 'while each session stressed me out and made me more anxious in the short term, overall [the course] made me feel more prepared and less anxious in the long run.' Interestingly, 18% of students felt that they would have been less anxious if they had not attended the course. Some of these students commented that 'talking repeatedly about [Step 1] increased [their] anxiety, [and] it would have been nice to have information to review online instead of having to go to talks.' Based on these comments, students appeared to appreciate the importance of early guidance and planning, but would have desired a different method of presentation. Furthermore, in the overall comments on the course, students frequently praised the opportunity to interact productively with upper class students. One responder commented that he/she 'really appreciated the upperclassmen taking the time to guide [younger students] when [they] are confused and going through transitions; this was an invaluable opportunity.'

Conclusions

Among the numerous challenges and obstacles medical students face, the transitions throughout medical school and the Step 1 examinations are among the most significant. Previous studies have demonstrated that students rely heavily on student advice and personal study habits when preparing for these important medical milestones (8). These studies have also shown that students have significant anxiety and stress about the Step 1 examination and thus will invest time and money into commercial review courses seeking structure and organization, despite the observation that these courses do not tend to increase Step 1 scores (5–8). Through a comprehensive assessment of the student body's perception of medical education at our institution, both strengths (i.e., curricular content) and relative weaknesses (i.e., process-oriented educational guidance) were identified in our program. This review provided an opportunity to develop a five-part seminar series that complements the existing curriculum and addresses issues of educational guidance and student anxiety. Overall, student support was observed for this course, and a reduction in student anxiety was demonstrated.

This course addresses previously reported factors that affect student preparation, including the development of personalized learning habits and the transfer of advice between medical students. It encourages formal self-assessment through repeated and deliberate conversations that emphasize scholastic self-appraisal. The course facilitates an organized approach to structured preparation by

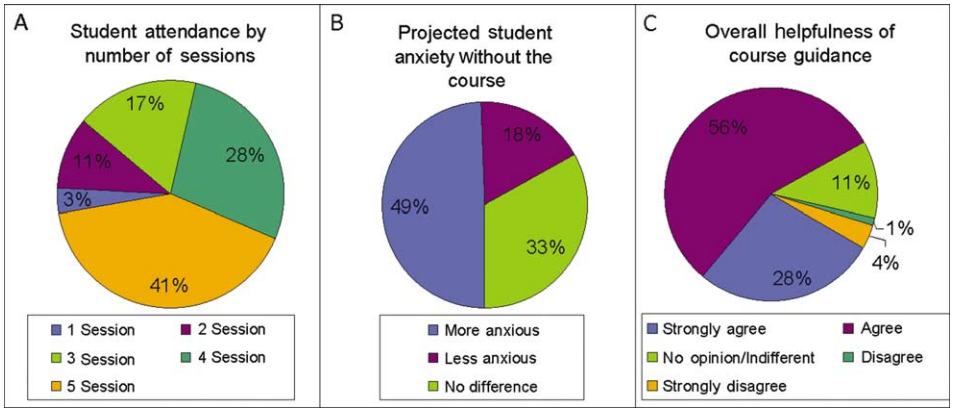

Fig. 4. Results of seminar series survey. Results from the post-course survey depicting student attendance (A); overall helpfullness of the course in terms of guidance and support (B); and projected student anxiety without the course (C). Scores were assessed with a five-point Likert scale, with 74% of students responding.

encouraging students to generate schedules and review materials throughout the learning process. It provides a non-threatening environment for discussion between students and enhances the possibility for mentorship opportunities. We encourage the use of such a series to complement pre-existing medical curricula.

Conflict of interest and funding

The authors have not received any funding or benefits from industry to conduct this study.

Note

A copy of the curriculum for this five-part seminar series can be accessed according to the following reference: Strowd R, Lambros A. Planning and Preparing for Success in Medical School. MedEdPortal; 2010. Available from: http://services.aamc.org/30/mededportal/servlet/s/segment/mededportal/?subid=7788.

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